



Furthermore, US Patent 6,558,784, the content of which is incorporated by reference, discloses a method for producing a skating boot upper from a plurality of elements in composite material, which are assembled  
5 together. A first stage of this method consists in producing flat elements comprising at least two layers of different materials. Each flat element is subsequently heated then compressed between two dies, in order to provide it with its permanent shape. These  
10 elements are finally assembled together.

These methods also make it possible to obtain a reproducible internal shape, but they nevertheless have a drawback. After the various elements have been produced, it is still necessary to attach auxiliary  
15 elements to them, such as eyelets for the laces intended for closing and tightening the boot. These operations are made difficult by the fact that the boot elements have already been provided with their final three-dimensional shape. Furthermore, in the case of  
20 the method mentioned last, the heating phase means that the auxiliary elements cannot be attached before the shaping and thermoforming modifies the surface condition of the material forming the outside of the boot, which usually prevents the desired surface  
25 condition from being obtained.

Patent FR 1 426 842, the content of which is incorporated by reference, also discloses a method for manufacturing soles of sandals.

### Summary of the Invention

It is an object of the invention to provide a  
5 method for producing boot elements, which offers a  
solution to the aforementioned problem and improves the  
methods of the prior art. In particular, the invention  
provides a method for producing a boot which makes it  
easier to add decorative patterns and to add auxiliary  
10 elements on these elements of the boot.

The manufacturing method according to the invention  
is specified in claim 1.

Various embodiments of the method are defined by  
dependent claims 2 to 20.

15 Claim 21 defines a sports boot upper which is  
obtained by the aforementioned method.

### Brief Description of the Drawings

20 An exemplary embodiment of the method according to  
the invention will be described with reference to the  
appended drawing, in which:

Figure 1 is a perspective view of a boot, the upper  
of which has been produced according to the invention.

25 Figure 2 is a rear view of a boot, the upper of  
which has been produced according to the invention.

Figure 3 is a front view of a flat blank in  
flexible material, intended to constitute the external  
surface of a part of a boot.

Figure 4 is a front view of a flat blank in flexible material, intended to constitute the internal surface of a part of a boot.

Figure 5 is a perspective view of a part which has been produced according to the invention and is intended to be assembled with a similar and symmetrical part in order to form a boot upper.

Figure 6 is a view from above of two halves of a mold for producing the part represented in Figure 5.

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#### **Description of the Preferred Embodiment**

The boot 1 represented in Figures 1 and 2 is intended for snowboarding. It consists principally of a semirigid upper 2 and a sole 3. The upper 2 is essentially produced from two half-shells 4, 5 assembled by stitching and/or adhesive bonding in a median plane, which divides the upper into a part 4 covering the outside of the user's foot and a part 5 covering the inside of the user's foot. The upper 2 furthermore comprises an affixed part 6 of substantially triangular shape, forming the heel of the boot 1. The sole 3, formed by an internal part and an external part which are secured together, is assembled before being fitted on the upper 2 of the boot by adhesive bonds and/or stitched seams. The boot 1 also has a tongue 7 secured to the upper at the bottom of its frontal opening 8. The boot is provided with an inner 13 for comfort.

The upper 2 of the boot comprises eyelets 9a for the laces, rings 10 for gripping, watertight flap 11 secured to the two shells 4, 5 level with the eyelets 9 for the laces, flaps 12 to prevent the fixing means of the tightening loops from affecting the inner 13, and decorations 23. The two half-shells are shaped after these various auxiliary elements have been fitted on the different elements intended to form the half-shells.

10 Hence, the production of a half-shell 4 as represented in Figure 5 begins with cutting out two blanks made of flexible materials, referred to as the internal blank 21 and the external blank 22, which are represented in Figures 3 and 4 and are respectively  
15 intended to form the internal and external surfaces of the half-shell 4.

An ink is applied to the external blank 22 by a known screen printing method in order to produce decorative patterns 23, and elements such as brand  
20 names are printed in this way. This assembling is carried out flat, the blank not yet having its final shape.

A ring 10 for gripping is assembled onto the internal blank 21 by stitching, in a region intended to  
25 be located at the top of the high part of the upper 2 once the boot is finished. Eyelets 9a for laces, a watertight flap 11 secured level with the eyelets 9a and a flap 12 over the instep, level with the frontal opening of the upper, are assembled by stitching. All  
30 this assembling is carried out flat, the blank not yet

having its final shape. The blank may also be preformed by stitching.

The flap 12 prevents a wear effect on the comfort inner 13 due to contact with the eyelet fixing rivets 9b made of a hard plastic material or metal, which cannot be stitched onto the upper.

Four blanks are thus prepared, two to form one of the half-shells of the upper and two others to form the other half-shell of the upper.

10 In order to produce one half-shell 4, the two blanks 21, 22 intended to form this half-shell are positioned, on top of one another, on the first half 31 of a mold 30 having the hollow impression of the half-shell of the upper. This mold is represented in Figure 15 6. In order to position them, the blanks 21 and 22 have a plurality of holes in their borders, allowing them to be secured to pins fixed on the mold 30. The mold is then closed by using its second half 32, and a foamable binding material, such as a polyurethane foam with two 20 components and a blowing agent, is injected between the blanks 21 and 22 through an orifice formed by the channels 33a and 33b, then release from the mold is carried out after polymerization of the foam. The half-shell 4 which is obtained is semirigid, and its 25 external and internal surfaces are complete. In particular, the external surface has its decoration and its permanent appearance.

A half-shell is thus obtained which, after it has been trimmed, then merely needs to be assembled with 30 another half-shell 5 obtained by the same method, and

with other elements such as the sole 3 and the element 6 of the upper forming the heel, by known adhesive bonding, welding and/or stitching methods.

5 The half-shell 4 which is obtained after release from the mold has its final three-dimensional shape and is almost finished; it has in particular the advantage of being already provided with eyelets 9a for laces, a watertight flap 11 level with these laces, a flap 12 to protect the comfort inner, and decorations 23 on its  
10 external part.

A synthetic elastic fabric will preferably be used for the blank forming the external surface of the upper, for example a polyamide, polyester or Lycra (registered trademark), normally waterproofed by means  
15 of an SEL, PU or PVC elastomer with a thickness of the order of from 0.8 to 1 mm. The elastomer film also has the effect of anchoring the foamable binding material.

An elastic synthetic fabric, such as those mentioned for producing the external surface, may be  
20 used for the blank forming the internal surface of the upper. It is also possible to use a material comprising a polyester felt, the thickness of which is of the order of from 1 to 3 mm.

The materials mentioned in this embodiment are  
25 merely examples. In order to produce the blanks, it is in fact possible to use any flexible material compatible with the stitching and adhesive bonding methods that are used to secure the various auxiliary elements. Likewise, it is possible to use different

injectable materials according to the intended mechanical properties of the half-shells.

Although illustrative embodiments of the invention have been shown and described, a wide range of  
5 modification, change and substitution is contemplated in the foregoing disclosure and in some instances, some features of the present invention may be employed without a corresponding use of the other features. Accordingly, it is appropriate that the appended claims  
10 be construed broadly and in a manner consistent with the scope of the invention.